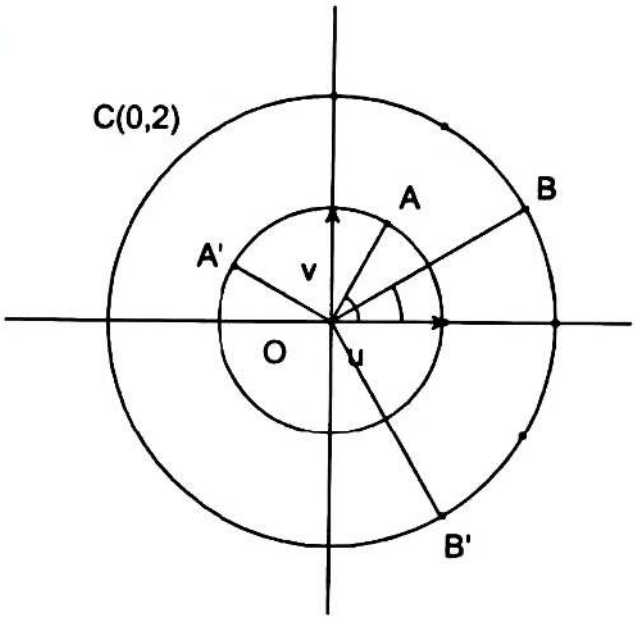
b) $\alpha = \frac{\pi}{6}$ $z_A = e^{i\frac{\pi}{3}}$; $z_B = 2e^{i\frac{\pi}{6}}$; $z_{A'} = e^{5i\frac{\pi}{6}}$; $z_{B'} = 2e^{-i\frac{\pi}{3}}$



2) $I = A' * B'$

a) $z_I = \frac{z_{A'} + z_{B'}}{2} = \frac{i(z_A - z_B)}{2} \Rightarrow \frac{z_I}{z_B - z_A} = \frac{i(z_A - z_B)}{2(z_B - z_A)} = -\frac{i}{2}$

b) $\frac{z_I}{z_B - z_A} = \frac{aff(\overrightarrow{OI})}{aff(\overrightarrow{AB})}$ est imaginaire pure d'où $(OI) \perp (AB)$

D'où (OI) est une hauteur issue de O au triangle OAB.

* $\frac{OI}{AB} = \frac{|z_I|}{|z_B - z_A|} = \left|-\frac{i}{2}\right| = \frac{1}{2}$ D'où $OI = \frac{1}{2}AB$.

EX 38 :

I) $\alpha \in [O, \pi]$

1) $z^2 - 2e^{i\alpha}z + 2e^{2i\alpha} = 0$ $\Delta' = e^{2i\alpha} - 2e^{2i\alpha} = -e^{2i\alpha} \rightarrow \delta' = ie^{i\alpha}$

Les solutions sont : $z' = e^{i\alpha} + ie^{i\alpha} = (1+i)e^{i\alpha}$ et $z'' = (1-i)e^{i\alpha}$

2) $z' = (1+i)e^{i\alpha} = \sqrt{2}e^{i\frac{\pi}{2}}.e^{i\alpha} \Rightarrow \boxed{z' = \sqrt{2}e^{i(\frac{\pi}{4}+\alpha)}}$ et $z'' = (1-i)e^{i\alpha} = \sqrt{2}e^{-i\frac{\pi}{2}}.e^{i\alpha} \Rightarrow \boxed{z'' = \sqrt{2}e^{i(\alpha-\frac{\pi}{4})}}$

II) $z_A = (1-i)e^{i\alpha}$ et $z_B = (1+i)e^{i\alpha}$

Qarray.tn -Aqra Blech- Qarray.tn